

MPS-400-350



Bipolar 2-Axis Power Supply

400A 350V



Output performance

Output current max	±400 A
Pulse duration max	25ms @ 400A, duty cycle 25% max ¹⁾ 100ms@ 300A, duty cycle 45% max ¹⁾
Output current rms	200 A
Output voltage max	±350 V
Rise time to 120uH coil	< 100 us, 0-200 A (10-90 %) < 140 us, 0-300 A (10-90 %) < 180 us, 0-400 A (10-90 %)
Switching frequency	> 180 kHz effective
Switching frequency ripple	< 3 Vrms differential
Bandwidth	> 10 kHz (-3dB)
Propagation delay	20-25 us, independent on amplitude ²⁾
Output noise current:	
0,1...10Hz	< 500...200 µArms linearly descending
10...10kHz	< 200 µArms
DC-offset current	< 10 mA, including self heating and ambient temperature effects, adjustable to zero
Gain accuracy and linearity	< 0.05 %, total gain error including self heating and ambient temperature effects
Total Harmonic Distortion	< 0.25 % @ 1kHz, 200 Arms

¹⁾ Test load 580 uH + 120mΩ. Bipolar pulse.

²⁾ Additional constant 20us delay when using signal low-pass filtering

Control and monitoring

Input sensitivity	1/40 V/A	Factory set, user definable
Signal input impedance	30 kΩ	
Current monitor	1/40 V/A	BNC-connector at cover of MPS unit
Voltage monitor	1/50 V/V	BNC-connector at cover of MPS unit
Fault protection: (Shutdown due to)	Overcurrent Overvoltage Overheat Overload Low DC voltage Internal voltages out of tolerance IGBT failure Software failure	

Tuning to load (supported 15 different coils for each axis) and diagnostics are done with GPA Tuner program. Communication port mini-USB.

System specifications



Input voltage 3-phase 400/480 Vph-ph, 50/60 Hz
Input current 32 Arms @ 400 V
27 Arms @ 480 V
Power supply:
Output voltage 410 Vdc
Output power continuous 20 kW
Output power pulsed > 100 kW
Capacitor bank > 50 mF
Power factor >0.9 , active PFC input stage

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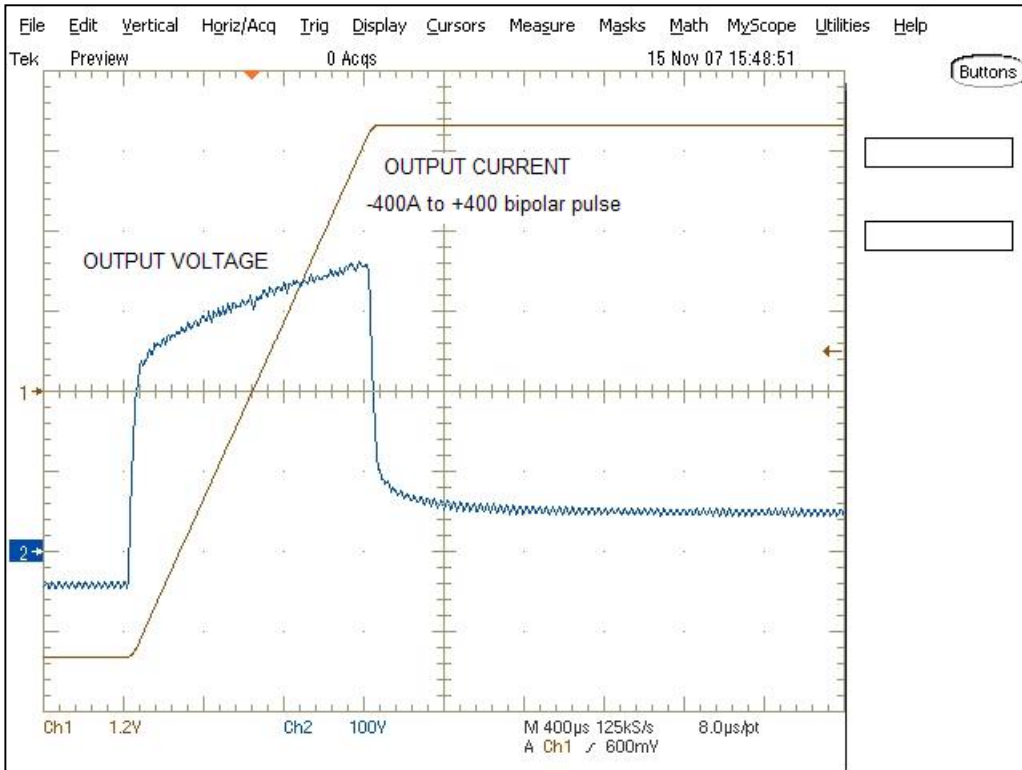
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Environmental requirements:
Ambient temperature 10 °C to 30 °C
Ambient humidity 30 to 70 % non-condensing
Storage temperature -20 °C to +85 °C
Cooling Air cooling (front in, rear out)

Cabinet dimensions:
Height 1200 mm
Width 600 mm
Depth 900 mm
Weight 480 kg

Regulatory

Safety and Compliance CB certificate EN 61010, EN 60601-1



Amplifier output current and voltage waveforms to 420 µH gradient coil

Company in brief

International Electric Company (IECO) designs and manufactures state-of-the-art electronics for medical, industrial and military applications tailored to meet customer needs.

With over 30 years of experience in power electronics we are able to provide solutions for even the most challenging requirements. IECO's quality system is ISO 9001 and ISO 13485 certified.

Power amplifier technology

IECO introduced its first gradient amplifier in 1994. This revolutionary PWM amplifier enabled excellent image quality in open MRI systems. Simultaneously IECO also launched the first D-class magnet power supply delivering new efficiency levels with 0,1ppm accuracy. IECO's expertise has recently been utilized in the development of the industry's first High Temperature Superconductive MRI magnets.

IECO's power modules are easily scalable for any type of load and any power level needed. Compact units can be connected in parallel or in series in Master/Slave operation to gain output currents up to 1200A and output voltages up to 1100V.

Over 700 Magnet Power Supply systems delivered worldwide.



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